

# Disaster Management for Cultural Properties

*The octagonal terra cotta turret on the tower of St. Dominick Roman Catholic Church in San Francisco was severely damaged by the Loma Prieta earthquake in 1989. Although the rest of the church was saved and retrofitted with new flying buttresses, the turret was removed and never rebuilt.*



Preservation professionals compile historic structure reports and condition assessments documenting the deterioration of materials in thousandths of an inch over decades. Much money is spent on such plans and the subsequent intervention. So far so good. But all can be lost in a matter of minutes if a disaster strikes. The magnitude of destruction is not in fractions of an inch but in whole sections of a building, whole buildings, and in some cases whole communities. In 1989, the Loma Prieta earthquake damaged over 400 historic buildings in the San Francisco Bay area. Within one month, approximately 100 of these damaged buildings were demolished. It is very difficult to protect and preserve historic buildings when they are in relatively good condition. Once they are damaged it is much more difficult. While it is not possible to prevent natural disasters from happening, we can—and must—reduce their impact if our past is to have a future.

Although there are renewed pleas for disaster preparedness after every major disaster, the truth is that very little is being done in disaster preparedness, especially for cultural resources. The vast majority of the work and funds spent on disasters is in response and recovery. Almost all of that goes into search and rescue; fighting the disaster (fighting the fire, sandbagging the floodwaters, etc.); emergency relief (medical, food, shelter, and clothing); restoring order and utilities; clearing and repairing circulation infrastructure (roads, bridges,

railroads, airports, and hospitals). Cultural resources are seldom if ever mentioned in community emergency plans and if they were, they would not be a high priority since life and safety must come first.

Disaster management includes everything that is or can be done before, during, and after a disaster. Disaster preparedness is the first step, often not taken, in disaster management. To be prepared one must know what types of disasters are possible for a given cultural property, the probability for each type, and the vulnerability of the resource to each type of potential disaster. Once these factors are determined, one can explore what can be done before, during, and after a disaster. A disaster or emergency plan documents all of this information in a very concise and useable form. It usually includes recommendations for future action and should be updated periodically so that the information is accurate and reliable. The plan usually includes lists of where to get help, things to do (where and how to turn off the gas, water, and electricity, if necessary), and supplies and where they are stored. There should be multiple copies of the emergency plan just in case some copies are destroyed in the disaster. Staff should be trained in how to use the plan. Training drills before the fire at Windsor Castle, for example, resulted in a substantial reduction in the loss to the building and contents.

Mitigation includes everything that can be done to reduce the vulnerability of the building to the disaster. Depending on the type or types of possible disaster, this may include, but is not limited to, posting evacuation routes; installing exit signs, fire extinguishers, emergency lighting, fire escapes, panic hardware, smoke detectors, and sprinkler systems; strengthening the building for high winds (anchoring roofs, bolting structures to their foundations, installing hurricane shutters, etc.); seismic retrofit (many different techniques from bolting structures to their foundation, anchoring parapets and chimneys to roofs, anchoring unreinforced masonry walls to floor

and roof systems, installing diaphragms, shear walls, diagonal bracing, braced frames, base isolation, to mention only a few). In reducing the damage to property there is usually a parallel reduction in the loss of life.

Almost all mitigation will have some effect upon the historic character and fabric of a resource. Alternative solutions can be evaluated using the Secretary of the Interior's *Standards for the Treatment of Historic Preservation Projects*. In many cases the loss of historic fabric can be restricted to less significant historic spaces and materials. Careful disassembly and re-assembly of parts of buildings may be necessary. During a disaster, nature will not restrict damage to the laundry room and spare the ballroom. Is it not better to make an informed decision before a disaster as to where to lose a little historic fabric than to leave the decision up to the fate of natural forces and risk losing everything?

Mitigation during a major rehabilitation is usually less expensive and more practical. On the other hand, work can be done incrementally as funds become available. If not carefully planned, the incremental approach can cause problems. For example, pipes installed for sprinkler systems may interfere with the selection or installation of various seismic retrofit solutions.

During the recovery period the state historic preservation offices, the National Park Service, and other preservation organizations have helped to assess damage and provide much needed technical assistance. These preservation teams have provided valuable documentation to local communities and help to historic building owners after Hurricane Hugo, the Loma Prieta earthquake, Hurricane Iniki, the Northridge earthquake, and the Oklahoma City bombing.

Preservationists and emergency managers have shared concerns and responsibilities in relation to protecting our cultural heritage. In this issue of *CRM*, Angela Tweedy addresses the current efforts to deal with some of the common issues of loss associated with natural hazards, and to provide recommendations toward accomplishing this end through an integrated planning approach. It is encouraging to learn that the Federal Emergency Management Agency (FEMA) now spends approximately 15% of its disaster assistance budget on state and local long-term mitigation measures. Hopefully, this percentage will increase resulting in a reduction in the need for response and recovery relief.

In their articles, Christopher Eck and Judith Estes emphasize how and why every collection, historic property, and community has a better chance at survival if it has a plan. Developing the plan forces us to consider what we need to do before, during, and after a disaster. The planning process also motivates us to take action while there is still time. Sultan Barakat and Rami Daher apply these planning principles in their article about the various disasters that have occurred in the region of Palestine and Jordan.

Every disaster has the potential to drastically reduce the historic character and fabric of the resource. Community support and determination plus good professional advice can reduce the loss. The response and recovery efforts described by Douglas Reed after a tornado damaged the Rocky Spring Presbyterian Church proves that historic fabric can be salvaged and reused. Volunteers can be a valued part of the team.

Too often a resource will survive the disaster only to be lost during the response and recovery. The daring emergency stabilization described in the article by Giorgio Croci reduced the chance of further damage to the Basilica of St. Francis of Assisi by aftershocks and increased the safety of the workers trying to save, protect, retrofit, and restore this priceless resource.

The recovery period is a good opportunity to solve problems and make improvements. Mary Catherine Martin and Lila King describe the re-evaluation of the Atlanta Fox Theatre's methods of archival storage and care for its collections after a devastating fire. In addition to the traditional professions needed on a preservation team, we may need to add a forensic toxicologist. In the restoration of Kathrineberg, Martin Weaver solved the problems of termites, bacteria, and toxic fungi by eliminating sources of moisture that supported the organic growth, using environmentally-friendly pesticidal treatments, and restoring the original systems and finishes of the building. Eva Osborne provides a summary of the issues affecting the preservation of historic structures in the wake of a terrorist attack.

As members of a large team of Egyptologists, anthropologists, geologists, architects, and engineers, James McLane and Raphael Wüst developed a master plan that will attempt to mitigate the impact of flooding on the tombs of the Valley of the Kings. Part of this mitigation is the reconstruction of an ancient diversion structure indicating that there has been attempts



*By progressive failure the unreinforced-brick parapet and fourth-floor façade of this building on Bluxome Street collapsed onto the sidewalk and street during the Loma Prieta earthquake killing six people in a car pool.*

to minimize the damage from floods for thousands of years. As was the case in ancient times, people with power and wealth usually have the means to live (and be buried) in the safest places and to alter their environment to provide additional protection.

Lisa Usman raises age-old questions in her article. Earthquakes, hurricanes, floods, and other disasters will continue to happen. It is not a question of “if” but “when?”

Well-built buildings

that are well maintained perform better during disasters than poorly-built structures with little or no maintenance. Buildings that have been retrofitted for seismic forces and hurricane winds in general perform better than those that have not been retrofitted. Mitigation is not fiction. The fiction is “We are doing enough and we will be ready for the next disaster.”

Probably the more important question is “Why are we not doing more to strengthen our historic structures, both great monuments and vernacular houses, to withstand the forces of future disasters while there is still time?” The answer we usually get is, “there is not enough money to preserve and maintain historic structures, not to mention to provide mitigation for a future disaster that ‘may or may not happen during my lifetime’ or ‘while I am living here and owning this property’.” However, we are now living in one of the longest periods of prosperity in modern times, yet we are doing very little to protect our irreplaceable cultural heritage. Why? There are a number of reasons. Here are just a few.

The pace of life is increasing at an ever-alarming rate and for many people disaster preparedness is not even at the bottom of their “to do” list. Most people have never experienced a

disaster or even seen one except on television or in the newspaper. Most people live in denial—disasters only affect other people, not us. This is a very false sense of security. FEMA reports that 75% of the United States is in one or more disaster zones. Even if we live and work in a relatively safe area, we may travel or vacation in areas that are prone to disasters.

Usually, preparing for a disaster does not show or is generally not perceived as valuable. Bolting your historic house down to the foundation usually is not visible and is certainly not a status symbol. Disaster preparedness is generally not a high priority, even in high-risk zones. However, once the disaster strikes it is a different situation. The resulting losses to business, industry, and tourism may be astronomical compared to the cost of planning and mitigation.

Public education and incentives are needed to make our heritage safer. These could be income tax incentives, investment tax credits for disaster preparedness and mitigation, property tax relief, insurance premium reductions, etc. All historic buildings cannot be retrofitted for disasters in any one-year, five-year, or ten-year period. However, if there were long-term programs of incentives, many historic buildings could be strengthened during major rehabilitations or incrementally as funds are available.

Those of us who are the owners and stewards of cultural properties and/or who are preservation and conservation professionals and advocates must constantly promote disaster preparedness through public awareness and education. Hopefully, this issue of *CRM* will help to focus on preparing for disasters in our planning while there is still time. It has often been said, “The difference between an emergency and a disaster is frequently preparation.”

*David W. Look, AIA, is Chief, Cultural Resources Team, Pacific Great Basin Support Office, National Park Service, San Francisco, California.*

*Dirk H.R. Spennemann, MA, PhD, is Senior Lecturer, Cultural Heritage Studies & Sub-Dean Postgraduate Coursework Programs, Charles Sturt University, Albury, New South Wales, Australia.*

*Mr. Look and Dr. Spennemann are co-guest editors of this issue of CRM.*

Photos by David W. Look.